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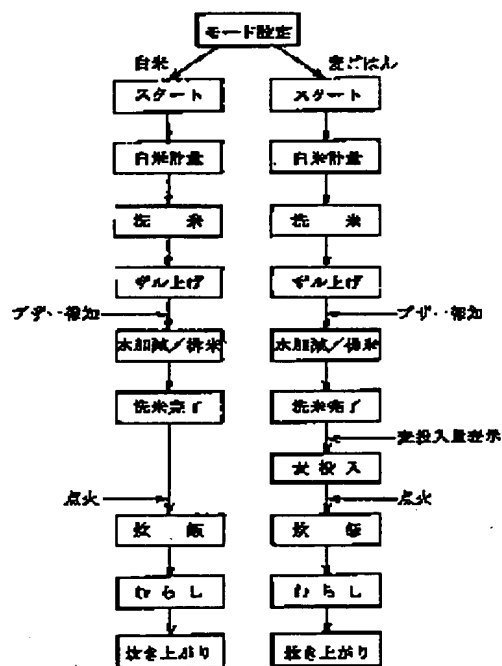
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(54) AUTOMATIC RICE COOKING DEVICE AND OPERATION METHOD THEREFOR

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an automatic rice cooking device capable of suitably cooking not only white rice but also mixed rice such as the rice boiled with barley.

SOLUTION: This automatic rice cooking device is provided with a mode setting means for selecting and setting a first mode for cooking the rice and a second mode for cooking the mixed rice and a rice cooking amount setting means for setting a rice cooking amount as the setting of the automatic rice cooking device. Then, a water supply part is controlled so as to supply water for an amount corresponding to the set rice cooking amount of the rice in the case of selecting the first mode and to supply the water for the amount corresponding to the set rice cooking amount of the mixed rice in the case of selecting a second mode.



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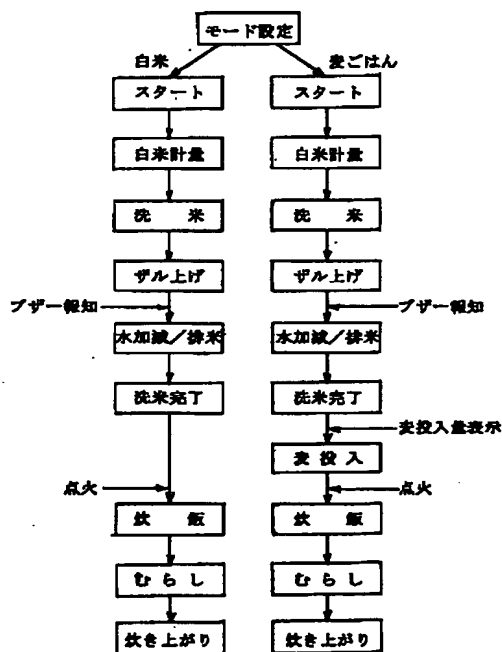
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(54) 【発明の名称】 自動炊飯装置及びその運転方法

(57) 【要約】

【課題】 白米の炊飯だけでなく麦ご飯等の炊き込みご飯の炊飯をも好適になしうる自動炊飯装置を提供する。

【解決手段】 自動炊飯装置の設定として米を炊飯する第1モードと炊き込みご飯を炊飯する第2モードとを選択設定するモード設定手段と、炊飯量を設定する炊飯量設定手段とを備え、第1モードを選択した場合に、第1モードを選択した場合に、設定した米の炊飯量に応じた水加減水を供給し、第2モードを選択した場合に、設定した炊き込みご飯の炊飯量の応じた水加減水を供給するように給水部を制御する。



【特許請求の範囲】

【請求項 1】 計量した米を炊飯部に投入し、給水部より炊飯部に水加減水を投入して炊飯する自動炊飯装置において、

米を炊飯する第 1 モードと炊き込みご飯を炊飯する第 2 モードとを選択設定するモード設定手段と、

炊飯量を設定する炊飯量設定手段と、

第 1 モードを選択した場合に、設定した米の炊飯量に応じた水加減水を供給し、且つ、第 2 モードを選択した場合に、設定した炊き込みご飯の炊飯量に応じた水加減水を供給するように前記給水部を制御する給水制御手段とを備えていることを特徴とする自動炊飯装置。

【請求項 2】 計量部で計量した米を炊飯部に投入し、給水部より炊飯部に水加減水を投入して炊飯する自動炊飯装置において、

米を炊飯する第 1 モードと炊き込みご飯を炊飯する第 2 モードとを選択設定するモード設定手段と、

炊飯量を設定する炊飯量設定手段と、

前記第 1 モードを選択した場合に、設定した米の炊飯量を計量し、且つ、第 2 モードを選択した場合に、設定した炊き込みご飯の炊飯量に含まれる米の量を計量するように前記計量部を制御する計量制御手段と、

第 1 モードを選択した場合に、設定した米の炊飯量に応じた水加減水を供給し、且つ、第 2 モードを選択した場合に、設定した炊き込みご飯の炊飯量に応じた水加減水を供給するように前記給水部を制御する給水制御手段とを備えていることを特徴とする自動炊飯装置。

【請求項 3】 前記第 2 モードを選択した場合に、設定した炊き込みご飯の炊飯量に含まれる具の量を表示する表示部を備えていることを特徴とする請求項 1 又は 2 に記載の自動炊飯装置。

【請求項 4】 米を炊飯する第 1 モードと炊き込みご飯を炊飯する第 2 モードとのいずれかを選択し、炊飯する米又は炊き込みご飯の炊飯量を設定し、

第 1 モードを選択した場合において、設定した米の炊飯量を計量して洗米部に投入し、該洗米部で洗米した米と該米の量に応じた水加減水とを炊飯部に投入して炊飯し、

第 2 モードを選択した場合において、設定した炊き込みご飯の炊飯量に含まれる米の量を計量して洗米部に投入し、該洗米部で洗米した米と炊き込みご飯の炊飯量に応じた水加減水とを炊飯部に投入し、米とは別に炊き込みご飯に含まれる具を手動又は自動で前記炊飯部に投入して炊飯することを特徴とする自動炊飯装置の運転方法。

【請求項 5】 前記第 2 モードを選択した場合において、炊飯器に米及び水加減水を投入したのちに、炊き込みご飯の具を投入することを特徴とする請求項 4 に記載の自動炊飯装置に運転方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、自動炊飯装置及びその運転方法に関するものである。

【0002】

【従来の技術】従来の自動炊飯装置としては、貯米部の米を計量部で計量して洗米部に投入し、該洗米部で洗米した米を水加減水とともに炊飯部に投入して炊飯するのが公知である。

【0003】

【発明が解決しようとする課題】上記のような自動炊飯装置は、米を大量に炊飯するレストランや給食業者等において有用に用いられるものであるが、白米の炊飯にしか対応していないため、メニューとして野菜や肉等の具を白米とともに炊き込む炊き込みご飯や、白米と大麦等を炊き込む麦ご飯等（総称して炊き込みご飯という）を備えていても、これに自動炊飯装置を利用するのは困難であった。すなわち、従来の自動炊飯装置で炊き込みご飯を炊飯しようとする、白米のみを洗米して炊飯部に投入するとともに、白米の量に応じた水加減水を炊飯器に投入し、これとは別に、作業者が手作業により、麦などの炊き込みご飯の具と炊き込みご飯の炊飯量に見合った追加の水加減水とを投入することとなり、これでは作業者の勘に頼って水加減水を追加、調整することになって炊き上がりにばらつきが生じ、商品として提供する炊き込みご飯の品質低下を招来するものであった。

【0004】そして、炊き込みご飯の炊飯量に含まれる白米の量を作業者自身が計算して自動炊飯装置に設定しなければならず、また、麦等の具の量についても作業者自身の計算によらなければならないため、作業者の負担が増大するとともに、希望通りの炊飯量、白米と米の割合で炊飯するのが困難であった。そこで、本発明は、米の炊飯だけでなく麦ご飯等の炊き込みご飯の炊飯をも好適になしうる自動炊飯装置及びその運転方法を提供することを目的とする。

【0005】

【課題を解決するための手段】本発明は、上記目的を達成するために以下の技術的手段を講じている。すなわち、本発明にかかる自動炊飯装置は、計量した米を炊飯部に投入し、給水部より炊飯部に水加減水を投入して炊飯する自動炊飯装置において、米を炊飯する第 1 モードと炊き込みご飯を炊飯する第 2 モードとを選択設定するモード設定手段と、炊飯量を設定する炊飯量設定手段と、第 1 モードを選択した場合に、設定した米の炊飯量に応じた水加減水を供給し、且つ、第 2 モードを選択した場合に、設定した炊き込みご飯の炊飯量に応じた水加減水を供給するように前記給水部を制御する給水制御手段とを備えていることを特徴とするものである。

【0006】これによれば、炊き込みご飯を炊飯するにあたり、所望の炊飯量を設定することで、該炊飯量に応じた水加減が行えるようになり、従来のように作業者自身が水加減水の追加調整等を行うことなく、炊き上がり

のばらつきを防止し、作業負担も軽減できるようになる。なお、本発明でいう炊き込みご飯とは、麦、粟等の穀物等と米とを一緒に炊き込んだものをいい、また、魚介類や肉、野菜等を米と一緒に炊き込む一般的な炊き込みご飯を含むものである。

【0007】また、米とは、洗米が必要な米（白米）に限らず、洗米を不要とした無洗米であってもよく、また、玄米であってもよい。更に、本発明にかかる自動炊飯装置は、計量部で計量した米を炊飯部に投入し、給水部より炊飯部に水加減水を投入して炊飯する自動炊飯装置において、米を炊飯する第1モードと炊き込みご飯を炊飯する第2モードとを選択設定するモード設定手段と、炊飯量を設定する炊飯量設定手段と、第1モードを選択した場合に、設定した米の炊飯量を計量し、且つ、第2モードを選択した場合に、設定した炊き込みご飯の炊飯量に含まれる米の量を計量するように前記計量部を制御する計量制御手段と、第1モードを選択した場合に、設定した米の炊飯量に応じた水加減水を供給し、且つ、第2モードを選択した場合に、設定した炊き込みご飯の炊飯量に応じた水加減水を供給するように前記給水部を制御する給水制御手段とを備えていることを特徴とするものである。

【0008】これにより、炊き込みご飯を炊飯するにあたって、従来のように作業者自身が米の量を計算することなく、所望の炊飯量を設定するだけで適正な米の計量が行え、また、炊き込みご飯の炊飯量に応じた水加減水を供給可能となって、炊き上がりのばらつきが防止でき、作業者の負担も軽減されるものとなる。また、本発明に係る自動炊飯装置は、前記第2モードを選択した場合に、設定した炊き込みご飯の炊飯量に含まれる具の量を表示する表示部を備えていることを特徴とするものである。

【0009】これにより、炊き込みご飯の具、例えば麦の投入量を作業者自身が計算する必要がなくなり、間違うことなく確実に投入することができるようになる。本発明にかかる自動炊飯装置の炊飯方法は、米を炊飯する第1モードと炊き込みご飯を炊飯する第2モードとのいずれかを選択し、炊飯する米又は炊き込みご飯の炊飯量を設定し、第1モードを選択した場合において、設定した米の炊飯量を計量して洗米部に投入し、該洗米部で洗米した米と該米の量に応じた水加減水とを炊飯部に投入して炊飯し、第2モードを選択した場合において、設定した炊き込みご飯の炊飯量に含まれる米の量を計量して洗米部に投入し、該洗米部で洗米した米と炊き込みご飯の炊飯量に応じた水加減水とを炊飯部に投入し、米とは別に炊き込みご飯の炊飯量に含まれる具を手動又は自動で前記炊飯部に投入して炊飯することを特徴とするものである。

【0010】これによれば、炊き込みご飯の炊飯にあたり、上記と同様に作業者自身による米の計量及び水加減

量の調整を行う必要がなくなっており、炊き上がりがばらつくことなく最適な条件での炊飯が行え、作業負担の軽減が図られる。また、本発明にかかる自動炊飯装置の運転方法は、第2モードを選択した場合において、炊飯器に米及び水加減水を投入したのちに、炊き込みご飯の具を投入することを特徴とするものであり、これによって、米の上に具が投入されるとともに、水加減水の供給により白米と具とが混ぜ合わされるようなことがなく、炊飯部の内釜の底での具の焦げ付き等を防止できる。

10 【0011】

【発明の実施の形態】以下本発明の実施の形態を図面を参照して説明する。図7及び図8には、本発明に係る自動炊飯装置1を示しており、この自動炊飯装置1は、本体フレーム2の上部に貯米部3を備え、該貯米部3の下方に洗米部4を備え、該洗米部4の下方に炊飯部5を備えており、本体フレーム2の下部にはキャスタ車輪で例示する車輪6が設けられて移動自在であり、所定位置に据え付けたときにはロック可能としている。

20 【0012】前記貯米部3は、略箱型に形成されたケース7を備え、該ケース7内に漏斗状の貯米タンク8を備え、該タンク8の下部には、モータ9により横軸回りに回転駆動される計量ドラム10を有する計量部11を備え、該計量ドラム11を所定回数回転することで貯米部3内の米（白米）を計量して排出可能としている。前記ケース7の上部は蓋体12により開閉自在とされており、この蓋体12を開いて貯米タンク8内に白米を補給可能であり、ケース7の前面には開閉自在な表示パネル13が備えられ、該表示パネル13の前面に、平面ディスプレイによる画面部14と操作部15とを有する操作表示部16（図2参照）が備えられ、表示パネル13の内部には、CPUとメモリとを有する制御部17が備えられており、この制御部17については後述する。

40 【0013】洗米部4は、計量ドラム10にて計量された白米が投入される洗米タンク18を備え、該タンク18の下部には排米口を有し、該排米口は上下動することで開閉自在に円錐型で示している排米弁19を備えている。排米弁19は、洗米タンク18の中心上に配した弁棒20の下部に備えられていて、該弁棒20をその上部に備えたモータ、カム等からなる弁駆動体（図示せず）によって上下動することで排米弁19によって排米口を開閉自在である。弁棒20には、中空軸が套嵌されていて、この中空軸に攪拌棒21を備えており、モータ、ベベルギヤ等の攪拌駆動体（図示せず）によって中空軸をその軸心回りに回転駆動することで攪拌棒21によって洗米タンク18内で計量米を洗米可能としている。

50 【0014】前記洗米タンク18の上部には、給水部22を構成する給水ノズル23を備えており、この給水ノズル23は電磁弁24を有する配管系25を介して水道蛇口等の圧力水源に接続されていて、洗米に必要な水量、炊飯に必要な水加減水量等を調整して供給可能であ

る。さらに、洗米タンク18の下部には、排水ジャケット26を備え、このジャケット26には開閉自在な排水弁を内蔵した排水ボックス27を有する排水装置に接続されており、洗米後の汚水等は機外に放出可能である。

【0015】炊飯部5は、本体フレーム2の下部において前後に引き出し自在とされた架台28上に載置した炊飯器29を備え、該炊飯器29は、ガス、電気等のコンロ部30と、外釜31及びこの外釜31に挿脱自在な内釜32を備え、この内釜32に洗米部4によって洗米され且つザル上げされた米を水加減して受け入れ可能である。内釜32は、蓋33によって炊飯中は圧力化に保持可能であり、この実施形態では蓋33を本体フレーム2側に残して炊飯部5を取出可能としており、このため、蓋33は本体フレーム2に昇降自在に設けられた昇降台34に連結され、レバー35を介して昇降台34を昇降することで蓋33を開閉自在としている。なお、蓋33の中央には開閉自在なシャッター33Aが設けられており、白米及び水加減水の投入時にはシャッター33Aを開くことで内釜32に投入可能としている。

【0016】また、前記コンロ部30は、手動着火と自動着火とが選択可能とされている。上記の構成において、白米炊飯の工程を簡単に説明すると、貯米タンク8内の白米を計量ドラム10により所定量だけ計量して洗米タンク18に投入し、給水部22から洗米水を供給しつつ洗米を行い、洗米後の水を排水したのち所定時間ザル上げを行い、ザル上げ終了後給水部22から水加減水を洗米タンク18内に供給するとともに、排水弁19を開いて白米と水加減水とを炊飯器29に投入し、該炊飯器29において炊飯、むらしを行うようになっている。

【0017】本発明の自動炊飯装置1は、通常の炊飯形態である白米炊飯をするだけでなく、白米と具と一緒に炊く炊き込みご飯の炊飯をも可能とし、具体的に本実施形態では、炊き込みご飯の一つとして麦ごはん（麦と白米とを一緒に炊飯したもの）を炊飯可能としており、そのため、前記制御部17には、白米炊飯を行う白米モード（第1モード）と、麦ごはん炊飯を行う麦ごはんモード（第2モード）とからなる炊飯モードを選択設定するモード設定手段を有している。また、制御部17には、モード設定手段の他、炊飯量、水加減の多少、洗い方度合い、ザル上げ時間、むらし時間等を設定する各設定手段を有しており、図2～図6には、これらの設定操作を行うための画面部14と操作部15の詳細が例示されている。

【0018】なお、本実施形態の自動炊飯装置1は、貯米部3に白米のみを貯留しておき、麦ごはんモードを選択した場合でも白米のみの洗米等を行って炊飯部5に投入し、麦を白米とは別に手作業により炊飯部5に投入するように構成されている。前記操作部15は、図2に示すように、設定ボタン（スイッチ）37、スタートボタン（スイッチ）38、予約ボタン（スイッチ）39、取

消ボタン（スイッチ）40を画面部14の下方向位置で横並びに配置しているとともに、選択ボタン（スイッチ）41及び補助機能ボタン（スイッチ）42を画面部14の右側方位置（左側方位置でも可）に配置しており、ここに、操作部15を操作中に、画面部14がオペレータの腕、手等によって目隠しされるのを防止しているのであり、また、操作部15には、図7に示しているメインスイッチ43を含むものである。

【0019】すなわち、炊飯にかかる各設定をするための設定ボタン37と、設定時の切換操作を行う選択ボタン41と、炊飯開始を設定するスタートボタン38等と、を表示パネル13に備え、前記各ボタンを操作することで制御部17をマイコン処理して運転するようになっているのである。前記画面部14は、横長長方形の平面ディスプレイ、例えば液晶ディスプレイ（LCD）、プラズマディスプレイ（PDP）等から構成され、自動炊飯の各設定を表示する設定表示画面45と自動炊飯の流れを表示する工程表示画面46とに全面切換可能としている。

【0020】そして、電源投入後の初期画面として図2に示す工程表示画面46を表示し、設定ボタン37を押すことにより図3に示す設定表示画面45を表示し、設定後、スタートボタン38を押して運転開始することで再び工程表示画面46を表示するようになっている。前記設定表示画面45は、図3に示すように、その上段に「メニューセット」の文字表示部45Aを備え、中段左欄には、上から下に「炊飯量」「水加減」「洗い方」「モード」「ザル上げ」「むらし」の各設定項目の文字表示部45Bを備え、これに対応して中段右欄に、炊飯量の「～（升）×1.8L（図では、2.0（升）×1.8Lのリットル表示）」の表示、水加減の「少～多」の段階表示、洗い方の「軽く～念入」の段階表示、炊飯モードの「白米、麦ごはん」、ザル上げ、むらしの時間表示等の設定値の表示部45Cを備え、下段には次の作業指示（メッセージ）表示部45D（図では「選択後、スタート又は予約を押す。取消を押すと前の画面に戻ります。」）を備えている。

【0021】選択ボタン41は、図2に示すように、その中心に「選択」の表示、その上下に上下切換選択ボタン41A、41B、その左右に、左右増減切換選択ボタン41C、41Dを有している。炊飯にかかる各設定を行うには、設定ボタン37をオンすることにより設定表示画面45が表示されるとともに、表示部45Bの「炊飯量」が白黒反転文字となって設定変更可能な状態となる。この状態で左右増減切換選択ボタン41C、41Dを操作することで希望の炊飯量が表示部45Cの上段に文字表示される。

【0022】ついで上下切換選択ボタンの「下」41Bをオンすれば表示部45Bは「水加減」を白黒反転表示し、左右増減切換選択ボタン41C、41Dを操作する

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ことで水加減の度合いが段階設定され、以下同じ要領で「洗い方」、「モード」、「ザル上げ」、「むらし」と切換選択ボタン41A、41Bを操作して切り換えると共に、左右増減切換選択ボタン41C、41Dをその都度操作することで希望通りに設定されるようになっている。前記工程表示画面46は、図4に例示するように、画面上段に、設定された炊飯モード（「白米」又は「麦ごはん」）及び炊飯量（升表示）、「運転中」か否かを表示する表示部46Aを備え、画面中段左欄に工程の流れ表示部46Bを備え、画面中段右欄に炊飯装置1の全体形状を描いた図形表示部46Cを備え、画面下段にメッセージ表示部46Dを備えている。

【0023】前記流れ表示部46Bは、「計量」「洗米」「ザル上げ」「水加減」「排米」「洗米完了」「炊飯」「むらし」「炊き上がり」の運転工程を文字表示しており、各工程中にはその文字が白黒反転して、例えば「計量中」「洗米中」等のように表記内容が変化するようにになっている。また、図形表示部46Cには、それぞれの工程中をランプ表示する表示部46Eを有し、各工程を行っている部位を白黒反転表示（工程中は黒色、工程外は白色で表示）するようになっている。

【0024】例として示す図4では、上段の表示部46Aに、炊飯モードとして「麦ごはん」、炊飯量として「2.0」升、及び「運転中」を表示し、流れ表示部46Bには、現在行われている工程として「ザル上げ中」と残時間「あと0分」を黒色表示し、図形表示部46Cには、ザル上げ工程が行われる洗米タンク18部分のランプ表示部46Eを黒色表示しており、メッセージ表示部46Dには、各工程における指示表示として、ザル上げ終了時の「釜の中確認！！スタートで水加減／排米」を表示している。

【0025】上記のように、麦ごはんモードを設定した場合には、運転中の工程表示画面46の上段表示部46Aに「麦ごはん」を表示し、白米モードを設定した場合には、図5に示すように上段表示部46Aに「白米」を表示するようにしているため、運転中に白米、麦ごはんのどちらを行っているかが一目で認識できるようになっている。また、流れ表示部46B及び図形表示部46Cは、「白米」「麦ごはん」ともに同一の表示であり、メッセージ表示部46Dでは、「白米」「麦ごはん」の各モードで、それぞれに対応した異なる指示表示又は注意表示等を行うようにしている。

【0026】以下、白米モードを選択設定して炊飯を行う工程と、麦ごはんモードを選択設定して炊飯を行う工程とを、図1を参照して説明する。まず、モード設定手段により「白米」を選択した場合、スタートボタン38を押すことで運転が開始し、計量部11においては、炊飯量設定手段により設定表示画面45で設定した炊飯量だけ貯米タンク8内の白米を計量して洗米タンク18に投入する。これに対し、モード設定手段により「麦ごは

ん」を選択した場合、計量部11では、炊飯量設定手段により設定した麦ごはんの炊飯量のうち、これに含まれる白米の量を計量して洗米タンク18を投入するようにしている。

【0027】すなわち、通常の白米炊飯を行う場合は設定した炊飯量だけ白米を計量すればよいが、麦ごはんを炊飯する場合、設定した炊飯量ではなく、これに含まれる白米を自動的に計量する必要があるため、本発明では、白米モードと麦ごはんモードとのそれぞれに対応する異なる炊飯データ（計量や水加減に関するデータ）を予め制御部17のメモリーに設定、記憶させ、選択されたモードに対応する炊飯データに基づいて適正な計量を実行するようにしており、ここに、計量制御手段たる制御部17により各モードに応じて計量部11を制御を可能としているのである。

【0028】このように、麦ごはんを炊飯する際には、設定された炊飯量に含まれる白米の量を自動的に計量できるため、従来のように作業者が白米の量を計算する手間が不要であり、作業負担が軽減できるようになる。なお、本実施形態では、麦ごはんを炊飯する場合の計量に関するデータとして、麦と白米との比率を約1:1として予め設定しており、例えば2.0升の麦ごはんを炊く場合、約1升の白米を自動計量して洗米タンク18に投入するようになっている。また、麦と白米との比率は上記に限られるものではなく適宜変更可能である。

【0029】白米モード、麦ごはんモードともに、白米の洗米が終了すると、洗米後の水を排水するとともにザル上げ工程に以降し、ザル上げが終了すると、その旨をオペレータに報知すべくブザー等による報知手段を作動し、工程表示画面46には、下段のメッセージ表示部46Dに、「釜の中確認！！スタートで水加減／排米」を表示する（図4参照、同図では麦ごはんモードの場合を例示）。このメッセージ表示に基づき、空の内釜32のセット確認を行うとともにスタートボタン38を押すことで給水部22から水加減水の供給がなされる。

【0030】ここで、白米モードの場合には、計量した白米の量に応じた水加減水が供給され、一方、麦ごはんモードの場合には、計量した白米の量ではなく麦ごはんの炊飯量に応じた水加減水が供給されるようになっている。すなわち、麦ごはんモードの場合、計量した白米の量は、設定された炊飯量の約半分（麦と白米の比率が約1:1の場合）となっているため、白米モードと同じように白米の量に応じて水加減水を供給したのでは不足が生じることとなる。そのため、本発明では、制御部17のメモリーに予め設定、記憶された各モードに対応する炊飯データ（計量や水加減に関するデータ）に基づき水加減水の供給を実行することで適正な水加減を可能としているのであり、ここに、給水制御手段たる制御部17により各モードに応じて給水部22を制御可能としている。

【0031】したがって、従来のように、作業者が水加減水を追加調整するという手間が不要であり、作業負担が軽減されるようになる。水加減水の供給が行われたのち排米弁 19 が開かれ、白米及び水加減水を内釜 32 に投入することで洗米完了となる。この際の工程表示画面 46 を図 5 及び図 6 に示す。洗米完了（炊飯準備完了）となると、白米モードの場合には、図 5 に示すように、メッセージ表示部 46D に「次運転が可能～。点火するか、内釜を交換して下さい」と表示され、そのまま炊飯を行う場合には炊飯部 5 を手動点火し、再び洗米完了までの工程を行う場合は、白米等が投入された内釜 32 を取り出して別の予備炊飯器等に移して炊飯し、炊飯部 5 に空の内釜 32 をセットして前記と同様の工程を繰り返す行うことで、効率の良く大量炊飯が行えるようになっている。なお、洗米完了までの工程を連続して行わない場合は、炊飯部 5 を自動点火するようにしてもよい。

【0032】一方、麦ごはんモードの場合には、図 6 に示すように、メッセージ部 46D に、「次運転が可能～。1. 6kg の麦を加え、点火。」と表示される。そして、表示のとおり内釜に 1. 6kg（約 1 升：麦ごはん 2 升炊きの場合）の麦を手作業で投入するとともに、炊飯部 5 を手動点火し、炊飯したのち所定時間むらすことで炊飯が完了する。ここで、メッセージ表示部 46D に投入する麦の量を表示することで、作業者は麦の量及び投入時期を間違ふことなく確実に投入することが可能であり、作業性の向上が図れるのである。また、洗米完了時にブザー等の報知手段により麦の投入時期を報知してもよく、これにより時間ロス無く円滑な作業が行えるようになる。

【0033】なお、麦の投入量を kg 表示（重量表示）とすることで、人為作業による投入量の計量を容易に行えるようにしているが、升表示（容積表示）、又は升表示と kg 表示とを切替可能としてもよい。上記に説明したように、麦ごはんモードの場合、白米のみを洗米部 4 で洗米、ザル上げ等することにより、白米については通常炊飯と同様の自動処理が可能であるとともに、麦については白米とは別に取り扱い、洗米部 4 等における工程を経ないことから、洗浄、ザル上げ等を行うことによる麦の“ふやけ”等を防止することができるようになっている。

【0034】そして、白米及び水加減水を炊飯部 5 に投入したあとに麦を投入するようにしていることから、麦が内釜 32 の底部で焦げ付くようなことを防止でき、更に、水加減水を投入したあとに麦を投入することから、水加減水の投入により白米と麦とが混ざり合うようなことを防止している。なお、麦を投入するには、内釜 32 の蓋 33 を昇降台 35 を介して開き、架台 28 を介して引き出した状態で行っても良いし、洗米部 4 の下方位位置に炊飯器 29 を保持したまま蓋 33 に設けたシャッター 33A を介して行ってもよい。

【0035】図 9 は、本発明の第 2 の実施形態を示すものであり、本実施形態では、本体フレーム 2 に麦を貯留する貯留タンク 48 を支持し、貯留タンク 48 の下部に開閉自在なシャッター 49 を設け、麦の投入の際にシャッター 49 を開くことで蓋 33 のシャッター 33A を介して自動的に麦を投入可能としている。したがって、麦ごはんの炊飯にかかる自動炊飯装置 1 の運転を略全自動として作業者の負担をより軽減することが可能となっている。なお、麦投入量の計量は、貯留タンク 48 に、計量ドラム等よりなる計量部 50 を設けることにより、麦ごはんの炊飯量に含まれる麦の量を計量ドラム 50 により自動的に計量してもよいし、貯留タンク 48 に重量センサを設け、所定重量の麦を排出するようにしてよい。

【0036】本発明は、上記実施形態に限ることなく適宜設計変更可能である。例えば、上記実施形態では、炊き込みご飯として、麦ごはんを例示しているが、魚介類や肉、野菜等の具を白米と炊き込む一般的な炊き込みご飯等としてもよく、この炊き込みご飯と麦ごはんとの両方を炊飯可能としてもよい。また、白米に代えて玄米と麦との炊き込みご飯を炊飯するようにしてもよく、炊き込みご飯の具として玄米を用いて白米と玄米との炊き込みご飯としてもよい。

【0037】また、洗米を不要とし予め計量された状態で袋詰め等されているような無洗米を白米に代えて用いてもよく、この場合、上記構成の自動炊飯装置において洗米工程を省略するか、または、自動炊飯装置として、洗米部、及び予め計量されていて計量部による計量が不要な場合は計量部を備えない構成とすることが可能である。自動炊飯の工程中において、水加減／排米の際、炊飯部の点火の際に手動操作を必要としているが、これを自動としてもよく、貯米部、洗米部、炊飯部等の配置も上記実施形態に限るものではない。

【0038】

【発明の効果】以上詳述したように、本発明の自動炊飯装置及びその運転方法によれば、米の炊飯だけでなく炊き込みご飯の炊飯も好適に行えるようになる。

【図面の簡単な説明】

【図 1】本発明に係る自動炊飯装置の工程図である。

【図 2】操作表示部を示す前面図である。

【図 3】設定表示画面を示す前面図である。

【図 4】麦ごはんモードにおける工程表示画面を示す前面図である。

【図 5】白米モードにおける工程表示画面を示す前面図である。

【図 6】麦ごはんモードにおける工程表示画面を示す前面図である。

【図 7】自動炊飯装置の全体正面図である。

【図 8】自動炊飯装置の全体側面図である。

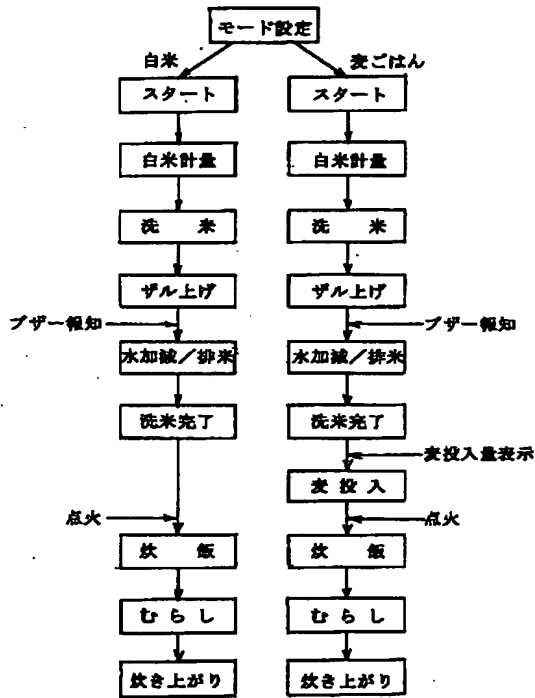
【図 9】本発明の第 2 実施形態に係る自動炊飯装置の全体正面図である。

【符号の説明】

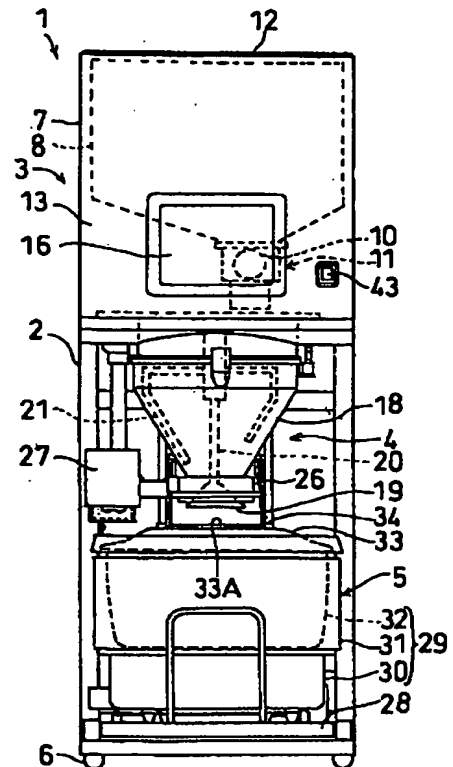
- 1 自動炊飯装置
3 貯米部
4 洗米部
5 炊飯部

- 11 計量部
16 操作表示部
17 制御部
22 給水部

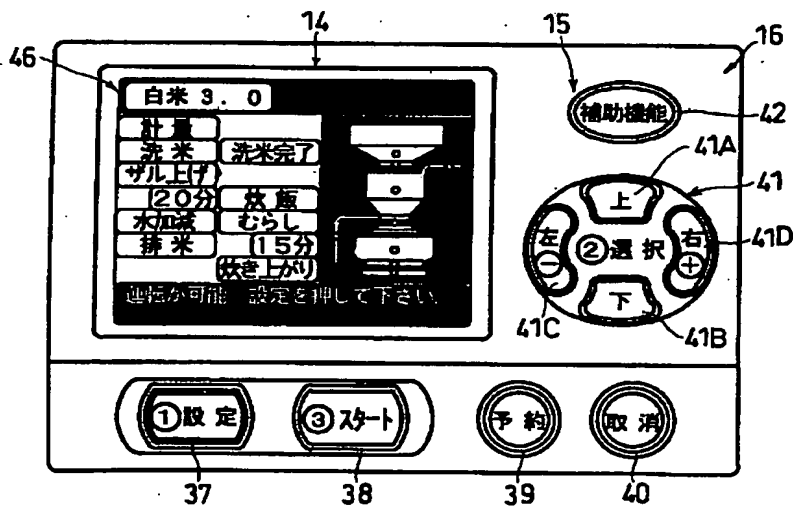
【図1】



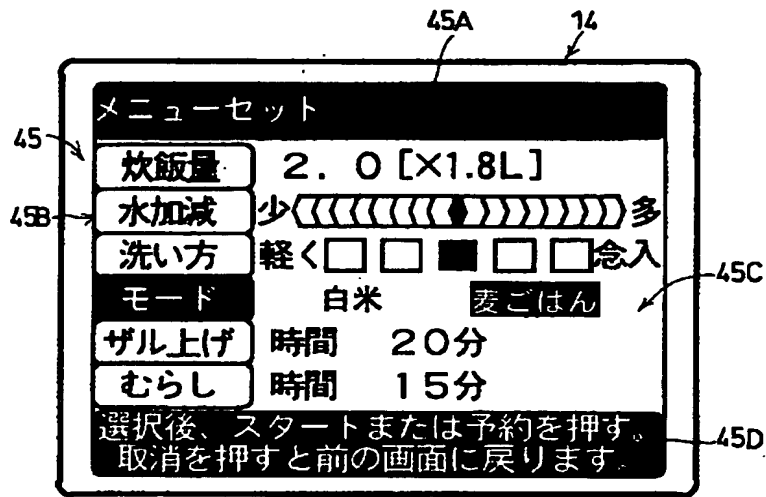
【図7】



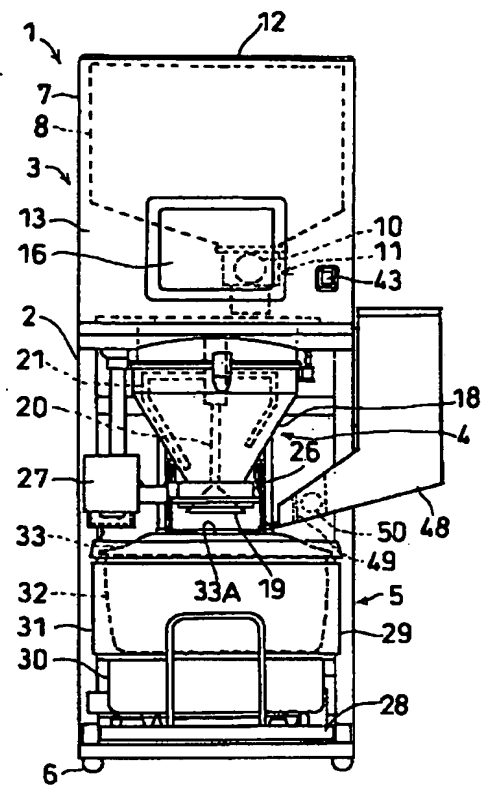
【図2】



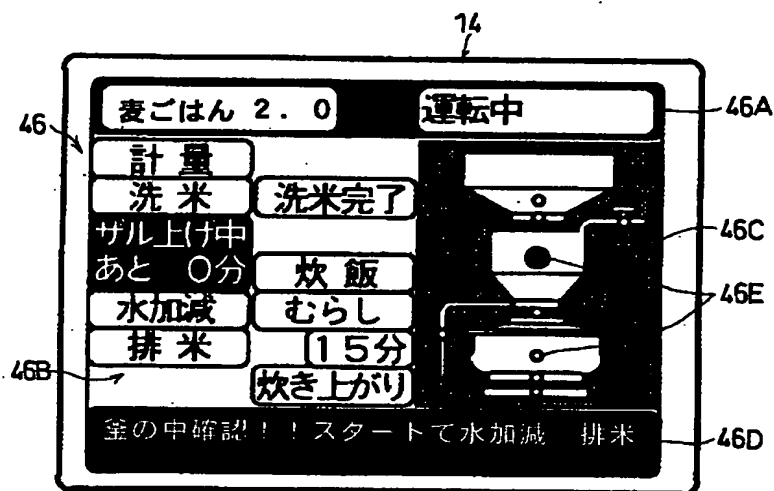
【図3】



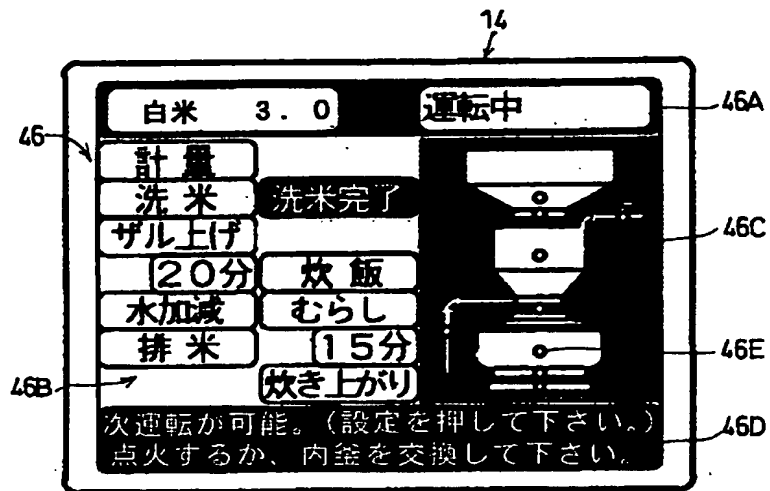
【図9】



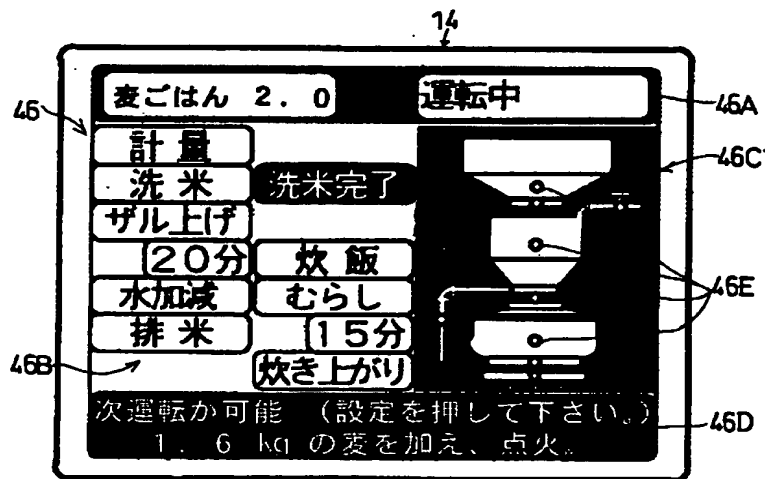
【図4】



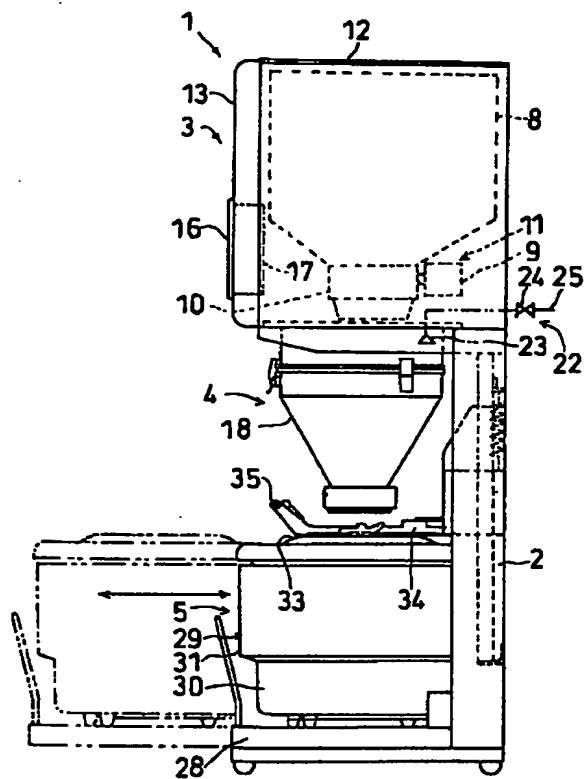
【図 5】



【図 6】



【図 8】



フロントページの続き

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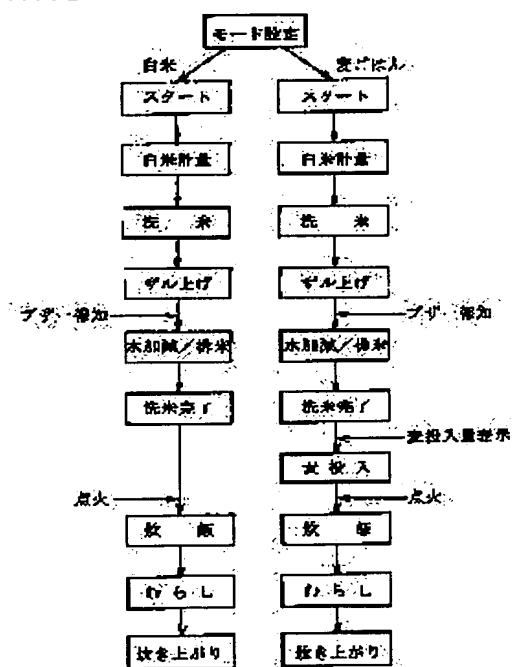
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(54) AUTOMATIC RICE COOKING DEVICE AND OPERATION METHOD THEREFOR

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an automatic rice cooking device capable of suitably cooking not only white rice but also mixed rice such as the rice boiled with barley.

SOLUTION: This automatic rice cooking device is provided with a mode setting means for selecting and setting a first mode for cooking the rice and a second mode for cooking the mixed rice and a rice cooking amount setting means for setting a rice cooking amount as the setting of the automatic rice cooking device. Then, a water supply part is controlled so as to supply water for an amount corresponding to the set rice cooking amount of the rice in the case of selecting the first mode and to supply the water for the amount corresponding to the set rice cooking amount of the mixed rice in the case of selecting a second mode.



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CLAIMS

[Claim(s)]

[Claim 1] In the automatic cooking-rice equipment which throws the measured rice into the cooking-rice section, throws amount-of-water water into the cooking-rice section from the water supply section, and carries out cooking rice The mode setting means which carries out a selection setup of the 1st mode which carries out cooking rice of the rice, and the 2nd mode which carries out cooking rice of the rice steamed with vegetables, When an amount setting means of cooking rice to set up the amount of cooking rice, and the 1st mode are chosen Automatic cooking-rice equipment characterized by having a feed-water-control means to control said water supply section to supply the amount-of-water water according to the amount of cooking rice of the set-up rice steamed with vegetables when the amount-of-water water according to the amount of cooking rice of the set-up rice is supplied and the 2nd mode is chosen.

[Claim 2] In the automatic cooking-rice equipment which throws into the cooking-rice section the rice measured by the metering zone, throws amount-of-water water into the cooking-rice section from the water supply section, and carries out cooking rice The mode setting means which carries out a selection setup of the 1st mode which carries out cooking rice of the rice, and the 2nd mode which carries out cooking rice of the rice steamed with vegetables, When an amount setting means of cooking rice to set up the amount of cooking rice, and said 1st mode are chosen The measuring control means which controls said metering zone to measure the amount of the rice contained in the amount of cooking rice of the set-up rice steamed with vegetables when the amount of cooking rice of the set-up rice is measured and the 2nd mode is chosen, When the 1st mode is chosen, the amount-of-water water according to the amount of cooking rice of the set-up rice is supplied. And automatic cooking-rice equipment characterized by having a feed-water-control means to control said water supply section to supply the amount-of-water water according to the amount of cooking rice of the set-up rice steamed with vegetables when the 2nd mode is chosen.

[Claim 3] Automatic cooking-rice equipment according to claim 1 or 2 characterized by having the display which displays the amount of the ingredient contained in the amount of cooking rice of the set-up rice steamed with vegetables when said 2nd mode is chosen.

[Claim 4] [when either of the 1st mode which carries out cooking rice of the rice, and the 2nd mode which carries out cooking rice of the rice steamed with vegetables was chosen, the amount of cooking rice of the rice which carries out cooking rice, or rice steamed with vegetables is set up and the 1st mode is chosen] [when measure the amount of cooking rice of the set-up rice, it supplies to the rice-cleaning section, cooking rice of the amount-of-water water according to the amount of the rice which carried out rice cleaning in this rice-cleaning section, and this rice is thrown in and carried out to the cooking-rice section and the 2nd mode is chosen] Measure the amount of the rice contained in the amount of cooking rice of the set-up rice steamed with vegetables, and it supplies to the rice-cleaning section. It is the operating method of the automatic cooking-rice equipment which throws into the cooking-rice section the rice which carried out rice cleaning in this rice-cleaning section, and the amount-of-water water according to the amount of cooking rice of rice steamed with vegetables, and is characterized for the ingredient with which rice is independently contained in rice steamed with vegetables by hand control or supplying to said cooking-rice section and carrying out cooking rice to it automatically.

[Claim 5] It is an operating method to the automatic cooking-rice equipment according to claim 4 characterized by throwing in the ingredient of rice steamed with vegetables after feeding rice and amount-of-water water into a rice cooker, when said 2nd mode is chosen.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to automatic cooking-rice equipment and its operating method.

[0002]

[Description of the Prior Art] What measures the rice of ***** by the metering zone, supplies to the rice-cleaning section as conventional automatic cooking-rice equipment, throws into the cooking-rice section the rice which carried out rice cleaning in this rice-cleaning section with amount-of-water water, and carries out cooking rice is well-known.

[0003]

[Problem(s) to be Solved by the Invention] Although the above automatic cooking-rice equipments are used useful in a restaurant, a meal contractor, etc. who do cooking rice of the rice in large quantities Since only cooking rice of white rice was supported, even if it had the wheat boiled rice which cooks the rice steamed with vegetables which cooks ingredients, such as vegetables and meat, with white rice as a menu, white rice, barley, etc. (it names generically and is called rice steamed with vegetables), it was difficult to use automatic cooking-rice equipment for this. Namely, if it is going to carry out cooking rice of the rice steamed with vegetables with conventional automatic cooking-rice equipment, while carrying out rice cleaning only of the white rice and throwing it into the cooking-rice section The amount-of-water water according to the amount of white rice is fed into a rice cooker. An operator apart from this by handicraft The amount-of-water water of the addition corresponding to the amount of cooking rice of the ingredient of rice steamed with vegetables, such as wheat, and rice steamed with vegetables will be thrown in. Now, it was what invites the debasement of the rice steamed with vegetables which dispersion produces to depend on an operator's intuition, and for amount-of-water water to be added and adjusted, and to be steamed, and is offered as goods.

[0004] And since the operator itself had to calculate the amount of the white rice contained in the amount of cooking rice of rice steamed with vegetables, and it had to be set as automatic cooking-rice equipment and it had to be based on an operator's own count also about the amount of ingredients, such as wheat, while an operator's burden increased, it was difficult to carry out cooking rice at a rate of the as desired amount of cooking rice, white rice, and rice. Then, this invention aims at offering the automatic cooking-rice equipment which can make suitably not only cooking rice of rice but cooking rice of rice steamed with vegetables, such as wheat boiled rice, and its operating method.

[0005]

[Means for Solving the Problem] This invention has provided the following technical means, in order to attain the above-mentioned purpose. Namely, the automatic cooking-rice equipment concerning this invention throws the measured rice into the cooking-rice section, and sets it to the automatic cooking-rice equipment which throws amount-of-water water into the cooking-rice section, and carries out cooking rice to it from the water supply section. The mode setting means which carries out a selection setup of the 1st mode which carries out cooking rice of the rice, and the 2nd mode which carries out cooking rice of the rice steamed with vegetables, When an amount setting means of cooking rice to set up the amount of cooking rice, and the 1st mode are chosen When the amount-of-water water according to the amount of cooking rice of the set-up rice is supplied and the 2nd mode is chosen, it is characterized by having a feed-water-control means to control said water supply section to supply the amount-of-water water according to the amount of cooking rice of the set-up rice steamed with vegetables.

[0006] According to this, without in carrying out cooking rice of the rice steamed with vegetables, being able to perform now the amount of water according to this amount of cooking rice, and the operator itself performing additional adjustment of amount-of-water water etc. like before by setting up the desired amount of cooking rice, steamed dispersion is prevented and an activity burden can also be mitigated. In addition, the common rice steamed with vegetables which the rice steamed with vegetables as used in the field of this invention means what cooked grain etc. and rice, such as wheat and foxtail millet, together, and cooks fish and shellfishes, meat, vegetables, etc. together with rice is included.

[0007] Moreover, rice may be pre-cleansed rice which made unnecessary not only the rice (white rice) that needs rice cleaning but rice cleaning, and may be brown rice. Furthermore, the automatic cooking-rice equipment concerning this invention throws into the cooking-rice section the rice measured by the metering zone, and sets it to the automatic cooking-rice equipment which throws amount-of-water water into the cooking-rice section, and carries out cooking rice to it from the water supply section. The mode setting means which carries out a selection setup of the 1st mode which carries out cooking rice of the rice, and the 2nd mode which carries out cooking rice of the rice steamed with vegetables, When an amount setting means of cooking rice to set up the amount of cooking rice, and the 1st mode are chosen The measuring control means which controls said metering zone to measure the amount of the rice contained in the amount of cooking rice of the set-up rice steamed with vegetables when the amount of cooking rice of the set-up rice is measured and the 2nd mode is chosen, When the amount-of-water water according to the amount of cooking rice of the rice set up when the 1st mode was chosen is supplied and the 2nd mode is chosen, it is characterized by having a feed-water-control means to control said water supply section to supply the amount-of-water water according to the amount of cooking rice of the set-up rice steamed with vegetables.

[0008] Without the operator itself calculating the amount of rice like before in carrying out cooking rice of the rice steamed with vegetables by this, proper rice is measurable only by setting up the desired amount of cooking rice, and supply of the amount-of-water water according to the amount of cooking rice of rice steamed with vegetables is attained, steamed dispersion can be prevented, and an operator's burden is also mitigated. Moreover, the automatic cooking-rice equipment concerning this invention is characterized by having the display which displays the amount of the ingredient contained in the amount of cooking rice of the set-up rice steamed with vegetables, when said 2nd mode is chosen.

[0009] It can supply certainly, without it becoming unnecessary for the operator itself to calculate the ingredient of rice steamed with vegetables, for example, the input of wheat, and making a mistake in it by this. [when the cooking-rice approach of the automatic cooking-rice equipment concerning this invention chose either of the 1st mode which carries out cooking rice of the rice, and the 2nd mode which carries out cooking rice of the rice steamed with vegetables, sets up the amount of cooking rice of the rice which carries out cooking rice, or rice steamed with vegetables and chooses the 1st mode] [when measure the amount of cooking rice of the set-up rice, it supplies to the rice-cleaning section, cooking rice of the amount-of-water water according to the amount of the rice which carried out rice cleaning in this rice-cleaning section, and this rice is thrown in and carried out to the cooking-rice section and the 2nd mode is chosen] Measure the amount of the rice contained in the amount of cooking rice of the set-up rice steamed with vegetables, and it supplies to the rice-cleaning section. The rice which carried out rice cleaning in this rice-cleaning section, and the amount-of-water water according to the amount of cooking rice of rice steamed with vegetables are thrown into the cooking-rice section, and rice is characterized for the ingredient independently contained in the amount of cooking rice of rice steamed with vegetables by hand control or supplying to said cooking-rice section and carrying out cooking rice to it automatically.

[0010] According to this, cooking rice of rice steamed with vegetables is hit, cooking rice in the optimal conditions can be performed, without it becoming unnecessary to perform adjustment of measuring of the rice by the operator itself, and the amount of amount of water like the above, cooking, and a riser varying, and mitigation of an activity burden is achieved. Moreover, the operating method of the automatic cooking-rice equipment concerning this invention When the 2nd mode is chosen, after feeding rice and amount-of-water water into a rice cooker, while it is characterized by throwing in the ingredient of rice steamed with vegetables and an ingredient is thrown in by this on rice The bad debt of the ingredient in the bottom of the inner kettle of the cooking-rice section etc. can be prevented so that white rice and an ingredient may mix together by supply of amount-of-water water and it may not be carried out.

[0011]

[Embodiment of the Invention] The gestalt of operation of this invention is explained with reference to a drawing below. The automatic cooking-rice equipment 1 concerning this invention is shown, this automatic cooking-rice equipment 1 equipped the upper part of the body frame 2 with ***** 3, and drawing 7 and drawing 8 were equipped with the rice-cleaning section 4 under this ***** 3, and are equipped with the cooking-rice section 5 under this rice-cleaning section 4, the wheel 6 illustrated with an axle-pin-rake wheel is formed in the lower part of the body frame 2, and it can move to it freely, and the lock is made possible when it installs in a predetermined location.

[0012] Said ***** 3 is equipped with the case 7 formed in the abbreviation core box, is equipped with the funnel-like **** tank 8 in this case 7, it equips the lower part of this tank 8 with the metering zone 11 which has the measuring drum 10 by which a rotation drive is carried out by the motor 9 at the circumference of an axis of abscissa, measures the rice in ***** 3 (white rice) by carrying out count rotation of predetermined of this measuring drum 11, and makes discharge possible. Closing motion of the upper part of said case 7 is enabled with the lid 12, this lid 12 can be opened, and white rice can be supplied in the **** tank 8. The front face of a case 7 is equipped with the display panel 13 which can be opened and closed freely. In the front face of this display panel 13 It has the actuation display 16 (refer to drawing 2) which has the screen section 14 and the control unit 15 on a flat-surface display, the interior of a display panel 13 is equipped with the control section 17 which has CPU and memory, and it mentions later about this control section 17.

[0013] The rice-cleaning section 4 was equipped with the rice-cleaning tank 18 by which the white rice measured on the measuring drum 10 is thrown in, in the lower part of this tank 18, it had ***** , and this ***** is equipped with ***** 19 shown with the cone mold free [closing motion] by moving up and down. ***** can be freely opened and closed by ***** 19 by moving up and down with the valve driver (not shown) which consists of a motor which the lower part of the valve rod 20 arranged on the core of the rice-cleaning tank 18 is equipped with ***** 19, and equipped the upper part with this valve rod 20, a cam, etc. The hollow shaft is ****(ed) by the valve rod 20, this hollow shaft is equipped with the stirring rod 21, and rice cleaning of measuring rice is made possible within the rice-cleaning tank 18 with the stirring rod 21 by carrying out the rotation drive of the hollow shaft with stirring drivers (not shown), such as a motor and a bevel gear, at the circumference of that axial center.

[0014] It has the water supply nozzle 23 which constitutes the water supply section 22, and it connects with pressure sources, such as a waterworks faucet, through the pipe line 25 which has a solenoid valve 24, and this water supply nozzle 23 can adjust amount of water required for rice cleaning, the amount of hydration water reducing required for cooking rice, etc. to the upper part of said rice-cleaning tank 18, and can supply them to it. Furthermore, the lower part of the rice-cleaning tank 18 is equipped with the wastewater jacket 26, it connects with the drainage system which has the wastewater box 27 which contained the drain valve which can be opened and closed freely in this jacket 26, and the sanitary sewage after rice cleaning etc. can be emitted outside the plane.

[0015] This rice cooker 29 can be equipped with the inner kettle 32 it can insert [inner kettle] freely in the moveable cooking stove sections 30, such as gas and electrical and electric equipment, and the outside iron pot 31 and the outside [this] iron pot 31, rice cleaning of the cooking-rice section 5 is carried out to this inner kettle 32 by the rice-cleaning section 4, and it has the rice cooker 29 laid on the stand 28 whose drawer was made free forward and backward in the lower part of the body frame 2, and it can receive [it can carry out the amount of water of the rice by which ZARU raising was carried out, and] it. As for the inside of cooking rice, an inner kettle 32 can hold to pressure-ization with a lid 33, and with this operation gestalt, it leaves a lid 33 to the body frame 2 side, fetch of the cooking-rice section 5 is made possible, for this reason, a lid 33 is connected with the ramp 34 established in the body frame 2 free [rise and fall], and it is enabling closing motion of a lid 33 by going up and down a ramp 34 through a lever 35. In addition, shutter 33A which can be opened and closed freely is prepared in the center of a lid 33, and the injection to an inner kettle 32 is enabled by opening shutter 33A at the time of an injection of white rice and amount-of-water water.

[0016] Moreover, said moveable cooking stove section 30 is made selectable [manual ignition and automatic ignition]. In the above-mentioned configuration, if the process of white rice cooking rice is explained briefly, only the specified quantity will measure the white rice in the **** tank 8 on the measuring drum 10, and it will be fed into the rice-cleaning tank 18. After performing rice cleaning and draining the water after rice cleaning, while performing predetermined time ZARU raising and supplying amount-of-water water in the rice-cleaning tank 18 from the water supply section 22 after ZARU raising termination, supplying rice-

cleaning water from the water supply section 22 ***** 19 is opened, white rice and amount-of-water water are fed into a rice cooker 29, and cooking rice and ***** are performed in this rice cooker 29.

[0017] The automatic cooking-rice equipment 1 of this invention not only carries out white rice cooking rice which is the usual cooking-rice gestalt, but makes possible cooking rice of rice steamed with vegetables which cooks white rice and an ingredient together. Concretely with this operation gestalt Cooking rice of wheat boiled rice (what carried out cooking rice of wheat and the white rice together) is made [therefore] possible as one of the rice steamed with vegetables. To said control section 17 It has the mode setting means which carries out a selection setup of the cooking-rice mode which consists of white rice mode (the 1st mode) in which white rice cooking rice is performed, and wheat boiled rice mode (the 2nd mode) in which wheat boiled rice cooking rice is performed. Moreover, in the control section 17, it has the amount of cooking rice besides a mode setting means, a how [to wash the amount of water some] degree, ZARU raising time amount, and each setting means to steam and to set up time amount etc., and the detail of the screen section 14 for performing these setting actuation and a control unit 15 is illustrated by drawing 2 - drawing 6 .

[0018] In addition, the automatic cooking-rice equipment 1 of this operation gestalt is constituted so that only white rice is stored in ***** 3, rice cleaning of only white rice etc. may be performed and it may supply to the cooking-rice section 5, even when wheat boiled rice mode is chosen, and wheat may be supplied to the cooking-rice section 5 by handicraft apart from white rice. As shown in drawing 2 , while said control unit 15 arranges the setup key (switch) 37, the start button (switch) 38, the reservation carbon button (switch) 39, and the cancellation carbon button (switch) 40 lining up side-by-side in the lower part location of the screen section 14 The selection carbon button (switch) 41 and the miscellaneous-function carbon button (switch) 42 are arranged in the method location of right-hand side of the screen section 14 (good also in the method location of left-hand side). While operating a control unit 15 here, it has prevented that eye hiding of the screen section 14 is carried out by an operator's arm, the hand, etc., and the main switch 43 shown in drawing 7 is included in a control unit 15.

[0019] That is, a display panel 13 is equipped with the setup key 37 for carrying out each setup concerning cooking rice, the selection carbon button 41 which performs change-over actuation at the time of a setup, and the start button 38 grade which sets up cooking-rice initiation, and by operating said each carbon button, microcomputer processing of the control section 17 is carried out, and it operates. the process display screen 46 which displays the flow of the setting display screen 45 which said screen section 14 consists of a flat-surface display of an oblong rectangle, for example, a liquid crystal display, (LCD), a plasma display (PDP), etc., and displays each setup of automatic cooking rice, and automatic cooking rice -- the whole surface -- it is supposed that it is switchable.

[0020] And the process display screen 46 shown in drawing 2 as an initial screen behind powering on is displayed, the setting display screen 45 shown in drawing 3 by pushing a setup key 37 is displayed, and the process display screen 46 is again displayed by pushing and carrying out the start up of the start button 38 after a setup. said setting display screen 45 is shown in drawing 3 -- as -- the upper case -- character representation section 45A of "menu setting" -- having -- the middle -- in the left column It has character representation section 45B of each setting item. the bottom from a top -- "the amount of cooking rice", the "amount of water", "how to wash", the "mode", and "ZARU raising" -- "-- steaming -- " -- this -- corresponding -- the middle -- the right column -- "-(measure) x1.8L (by a diagram) of the amount of cooking rice The display of a liter display of 2.0(measure) x1.8L", the phase display of the amount of water of "*** - **", It washes, has display 45C of the set points, such as a phase display of "being - sense ON lightly" of the direction, "the white rice and wheat boiled rice" in cooking-rice mode, ZARU raising, and a time amount display of *****, and is the following workmanship instruction (message) display 45D (a start or reservation is pushed after "selection by a diagram.) in the lower berth. if cancellation is pushed -- a front screen -- return measure. " -- it has.

[0021] It has the vertical change-over selection carbon buttons 41A and 41B in the display of "selection", and its upper and lower sides, and the selection carbon button 41 has the right-and-left increase-and-decrease selection carbon buttons 41C and 41D of a change-over in the right and left at the core, as shown in drawing 2 . In order to perform each setup concerning cooking rice, while the setting display screen 45 is displayed by turning on a setup key 37, the "amount of cooking rice" of display 45B serves as a tone reversal alphabetic character, and will be in the condition in which setting modification is possible. Character representation of the amount of cooking rice of hope is carried out to the upper case of display 45C by operating the right-and-

left increase-and-decrease selection carbon buttons 41C and 41D of a change-over in this condition.

[0022] Subsequently, if "bottom" of vertical change-over selection carbon button 41B is turned on, display 45B will carry out the inverse video of the "amount of water." the degree of the amount of water carries out a phase setup by operating the right-and-left increase-and-decrease selection carbon buttons 41C and 41D of a change-over -- having -- the following -- the same point -- "how to wash", the "mode", and "ZARU raising" -- "-- steaming -- ", while operating and switching the change-over selection carbon buttons 41A and 41B It is set up as desired by operating the right-and-left increase-and-decrease selection carbon buttons 41C and 41D of a change-over each time. The cooking-rice mode ("white rice" or "wheat boiled rice") and the amount of cooking rice (measure display) which were set as the screen upper case so that said process display screen 46 might be illustrated to drawing 4 , display 46A which indicates whether to be "under [operation]" ***** -- having -- a screen -- the middle -- the left column -- flow display 46B of a process -- having -- a screen -- the middle -- it had graphic form display 46C which drew the whole cooking-rice equipment 1 configuration on the right column, and the screen lower berth is equipped with message indicator section 46D.

[0023] said flow display 46B -- "measuring", "rice cleaning", "ZARU raising", the "amount of water", "****", "rice-cleaning completion", and "cooking rice" -- "-- steaming -- " -- "-- being steamed -- " -- character representation of the operation process is carried out, and the alphabetic character is displayed in white in each process, for example, the contents of a notation change like ""during measuring and rice cleaning"." Moreover, it has display 46E which carries out lamp display of the inside of each process in graphic form display 46C, and the inverse video (it is white the inside of a process and it displays black and a process outside) of the part which is performing each process is carried out to it.

[0024] In drawing 4 shown as an example, "2.0" measures and "under operation" are displayed on display 46A of an upper case as "wheat boiled rice" and an amount of cooking rice as cooking-rice mode. To flow display 46B The remaining time "0 more minute" is indicated by black "under ZARU raising" as a process performed now. To graphic form display 46C The lamp display section 46E of rice-cleaning tank 18 part to which a ZARU raising process is performed is indicated by black, and it is displaying "they being the amount of water/**** by check-in iron pot !! start" at the time of ZARU raising termination on message indicator section 46D as a directions display in each process.

[0025] As mentioned above, since "wheat boiled rice" is displayed on upper case display 46A of the process display screen 46 under operation when wheat boiled rice mode is set up, and he is trying to display "white rice" on upper case display 46A as shown in drawing 5 when white rice mode is set up, which shall be performed between white rice and wheat boiled rice during operation can recognize at a glance. Moreover, it is the same display, and in message indicator section 46D, it is each mode of "white rice" and "wheat boiled rice", and "white rice" and "wheat boiled rice" are made, as for flow display 46B and graphic form display 46C, to perform a different directions display or a different warning sign corresponding to each etc.

[0026] The process which carries out a selection setup of the white rice mode, and performs cooking rice hereafter, and the process which carries out a selection setup of the wheat boiled rice mode, and performs cooking rice are explained with reference to drawing 1 . First, when "white rice" is chosen with a mode setting means, only the amount of cooking rice which operation started by pushing a start button 38, and was set up with the amount setting means of cooking rice in the metering zone 11 in the setting display screen 45 measures the white rice in the **** tank 8, and is supplied to the rice-cleaning tank 18. On the other hand, when "wheat boiled rice" is chosen with a mode setting means, he measures the amount of the white rice contained in this among the amounts of cooking rice of the wheat boiled rice set up with the amount setting means of cooking rice, and is trying to throw in the rice-cleaning tank 18 in a metering zone 11.

[0027] Namely, since only the set-up amount of cooking rice should measure white rice when performing the usual white rice cooking rice, but it will be necessary to measure automatically not the set-up amount of cooking rice but the white rice contained in this when carrying out cooking rice of the wheat boiled rice, In this invention, different cooking-rice data (data about measuring or the amount of water) corresponding to each in white rice mode and wheat boiled rice mode are beforehand set as the memory of a control section 17. It is made to memorize, and is made to perform proper measuring based on the cooking-rice data corresponding to the selected mode, and control is made possible for the metering zone 11 here according to each mode by the measuring control means slack control section 17.

[0028] Thus, since the amount of the white rice contained in the set-up amount of cooking rice can be automatically measured in case cooking rice of the wheat boiled rice is carried out, the time and effort to

which the operator himself calculates the amount of white rice like before can be unnecessary, and an activity burden can be mitigated. In addition, with this operation gestalt, when having set up the ratio of wheat and white rice beforehand as about 1:1, for example, cooking the wheat boiled rice of 2.0 measures as data about measuring in the case of carrying out cooking rice of the wheat boiled rice, automatic measuring is carried out and the white rice of about 1 measure is fed into the rice-cleaning tank 18. Moreover, the ratio of wheat and white rice is not restricted above and can be changed suitably.

[0029] After rice cleaning of white rice is completed, while white rice mode and wheat boiled rice mode drain the water after rice cleaning, after it makes them into a ZARU raising process henceforth and ZARU raising ends them. The information means at a buzzer etc. is operated that that should be reported to an operator, and it displays "they are the amount of water/**** by check-in iron pot !! start" on the process display screen 46 at message indicator section 46D of the lower berth (the case in wheat boiled rice mode is illustrated in refer to drawing 4 and this drawing). Based on this message indicator, while performing the set check of the empty inner kettle 32, supply of amount-of-water water is made from the water supply section 22 by pushing a start button 38.

[0030] Here, in the case of white rice mode, the amount-of-water water according to the amount of the measured white rice is supplied, and on the other hand, when it is in wheat boiled rice mode, the amount-of-water water according to not the amount of the measured white rice but the amount of cooking rice of wheat boiled rice is supplied. That is, since the amount of the white rice which was measured in the case of wheat boiled rice mode serves as the abbreviation half of the set-up amount of cooking rice (when the ratio of wheat and white rice is about 1:1), by having supplied amount-of-water water according to the amount of white rice like white rice mode, lack will produce it. Therefore, in this invention, the proper amount of water is made possible by performing supply of amount-of-water water based on the cooking-rice data (data about measuring or the amount of water) corresponding to each mode which was beforehand set as the memory of a control section 17, and was memorized, and the water supply section 22 is made controllable here according to each mode by the feed-water-control means slack control section 17.

[0031] Therefore, the time and effort that an operator does additional adjustment of the amount-of-water water is unnecessary like before, and an activity burden comes to be mitigated. After supply of amount-of-water water is performed, ***** 19 is opened, and it becomes rice-cleaning completion by throwing white rice and amount-of-water water into an inner kettle 32. The process display screen 46 in this case is shown in drawing 5 and drawing 6. When it comes to rice-cleaning completion (cooking-rice preparation completion), as shown at drawing 5 in the case of white rice mode, "degree operation is possible - to message indicator section 46D. When exchange inner kettles to see you light" is displayed, carrying out manual ignition of the cooking-rice section 5 in performing cooking rice as it is, and performing the process to rice-cleaning completion again. By carrying out by taking out the inner kettle 32 into which white rice etc. was thrown, moving and carrying out cooking rice to another reserve rice cooker etc., setting the empty inner kettle 32 to the cooking-rice section 5, and repeating the same process as the above, it can be efficient and extensive cooking rice can be performed now. In addition, when not performing the process to rice-cleaning completion continuously, the cooking-rice section 5 may be made to be fired automatically.

[0032] On the other hand, as shown at drawing 6 in the case of wheat boiled rice mode, "degree operation is possible - to message section 46D. 1.6kg wheat is added and is lit. It is displayed as ". And while supplying 1.6kg (about 1 measure: in the case of wheat boiled rice 2 *****) wheat to an inner kettle manually as a display, after carrying out manual ignition and carrying out cooking rice of the cooking-rice section 5, cooking rice is completed by steaming predetermined time. Here, by displaying the amount of the wheat supplied to message indicator section 46D, an operator can be supplied certainly, without making a mistake in the amount and injection stage of wheat, and can aim at improvement in workability. Moreover, information means, such as a buzzer, may report the injection stage of wheat at the time of rice-cleaning completion, and, thereby, a smooth activity [be / no time amount loss] can be done now.

[0033] In addition, although it enables it to measure the input by the artificial activity easily by considering the input of wheat as kg display (weight display), it is good also as switchable in a measure display (volume display) or a measure display, and kg display. " of the wheat by performing washing, ZARU raising, etc., since white rice is independently dealt with about wheat and it does not pass through the process in rice-cleaning section 4 grade, while the same automatic processing as cooking rice is usually possible about white rice in the case of wheat boiled rice mode when rice cleaning, ZARU raising, etc. carry out only white rice in

the rice-cleaning section 4 as explained above -- it can swell up and "etc. can be prevented [****] now -- **.

[0034] And since wheat is supplied after being able to prevent that wheat gets burned at the pars basilaris ossis occipitalis of an inner kettle 32 since he is trying to supply wheat after throwing white rice and amount-of-water water into the cooking-rice section 5 and throwing in amount-of-water water further, it has prevented that white rice and wheat are mixed by injection of amount-of-water water. In addition, in order to supply wheat, the lid 33 of an inner kettle 32 may be opened through a ramp 35, and you may carry out in the condition of having pulled out through the stand 28, and may carry out through shutter 33A prepared in the lid 33, holding a rice cooker 29 in the lower part location of the rice-cleaning section 4.

[0035] Drawing 9 shows the 2nd operation gestalt of this invention, supports the reservoir tank 48 which stores wheat in the body frame 2 with this operation gestalt, forms the shutter 49 which can be freely opened and closed in the lower part of the reservoir tank 48, and is enabling the injection of wheat automatically through shutter 33A of a lid 33 by opening a shutter 49 in the case of the injection of wheat. therefore, operation of the automatic cooking-rice equipment 1 concerning cooking rice of wheat boiled rice -- abbreviation -- it is possible to suppose that it is full automatic and to mitigate an operator's burden more. In addition, measuring of a wheat input may measure automatically the amount of the wheat contained in the amount of cooking rice of wheat boiled rice on the measuring drum 50, and forms a weight sensor in the reservoir tank 48, and you may make it discharge the wheat of predetermined weight by forming the metering zone 50 which becomes the reservoir tank 48 from a measuring drum etc.

[0036] A design change is possible for this invention suitably, without restricting to the above-mentioned operation gestalt. For example, although wheat boiled rice is illustrated as rice steamed with vegetables with the above-mentioned operation gestalt, it is good also as common rice steamed with vegetables which cooks ingredients, such as fish and shellfishes, and meat, vegetables, with white rice, and good also as cooking rice being possible with both this rice steamed with vegetables and wheat boiled rice. Moreover, it replaces with white rice, may be made to carry out cooking rice of the rice steamed with vegetables of brown rice and wheat, and is good also as rice steamed with vegetables of white rice and brown rice, using brown rice as an ingredient of rice steamed with vegetables.

[0037] Moreover, it is possible to consider as the configuration which may replace with and use for white rice pre-cleansed rice with which packing etc. is carried out in the condition of having made rice cleaning unnecessary and having been measured beforehand, skips a rice-cleaning process in the automatic cooking-rice equipment of the above-mentioned configuration in this case, or is not equipped with a metering zone as automatic cooking-rice equipment when the rice-cleaning section and measuring are measured beforehand and according to a metering zone are unnecessary. Although it sets in process [automatic cooking rice] and manual operation is needed in the case of ignition of the cooking-rice section in the case of the amount of water/****, it is good also as automatic and arrangement of *****, the rice-cleaning section, the cooking-rice section, etc. does not restrict this to the above-mentioned operation gestalt, either.

[0038]

[Effect of the Invention] As explained in full detail above, according to the automatic cooking-rice equipment of this invention, and its operating method, not only cooking rice of rice but cooking rice of rice steamed with vegetables can be suitably performed now.

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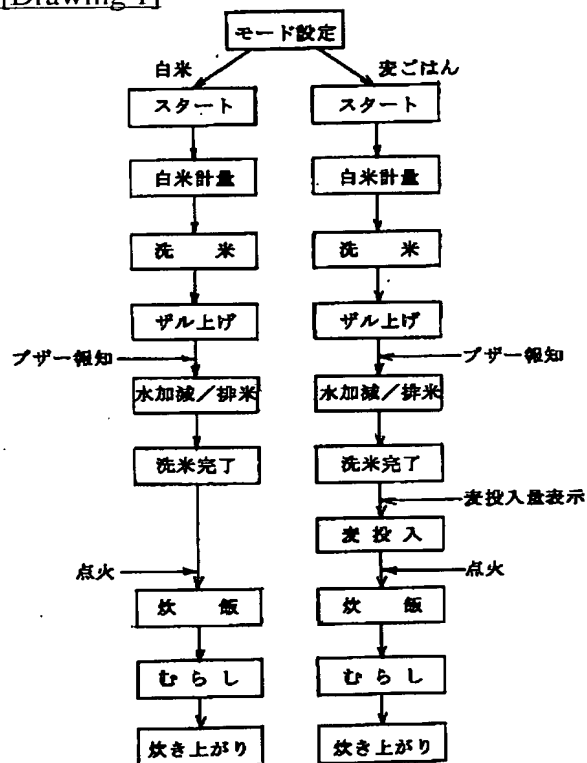
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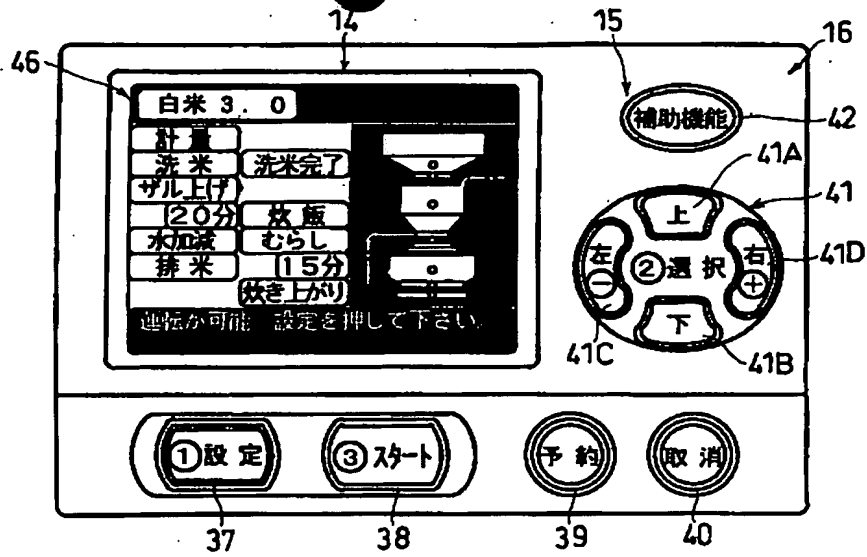
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DRAWINGS

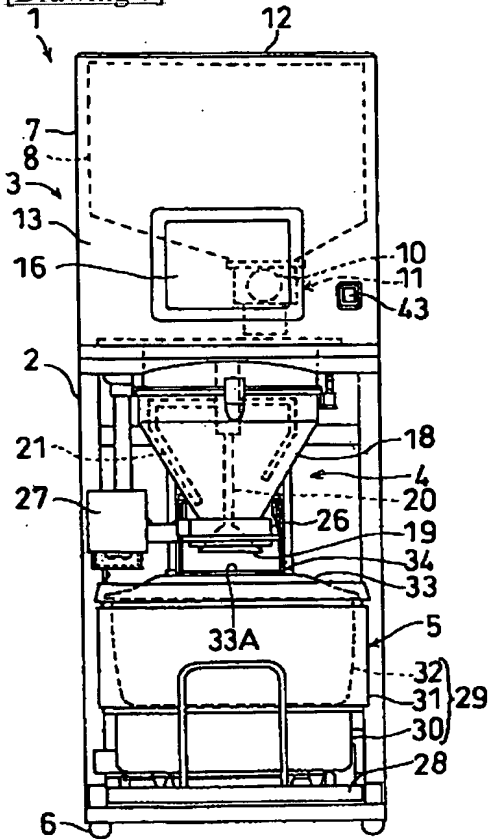
[Drawing 1]



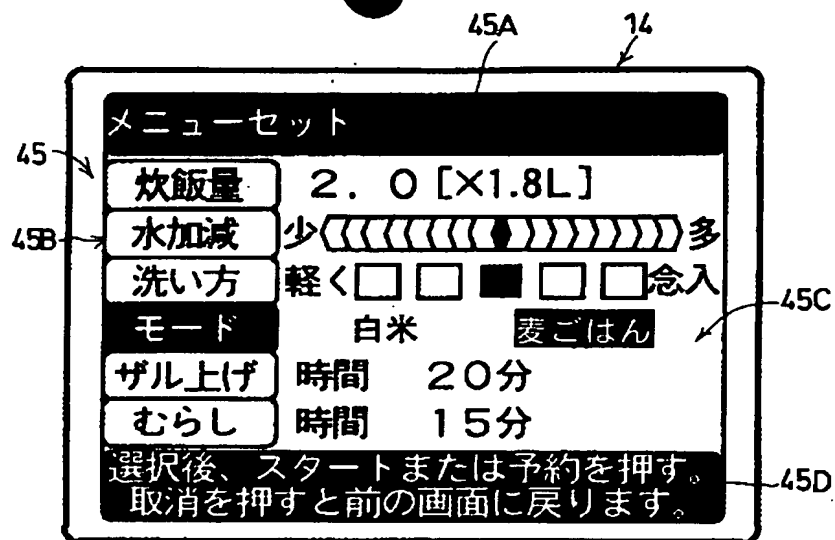
[Drawing 2]



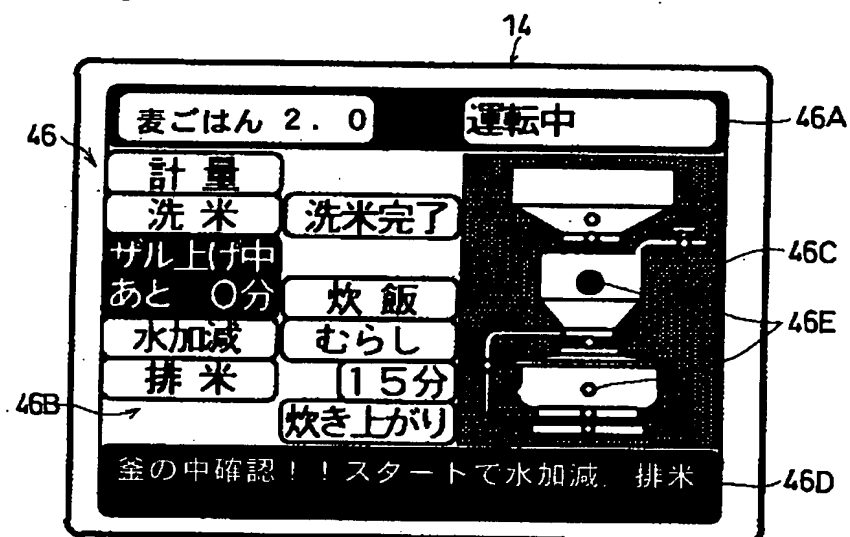
[Drawing 7]



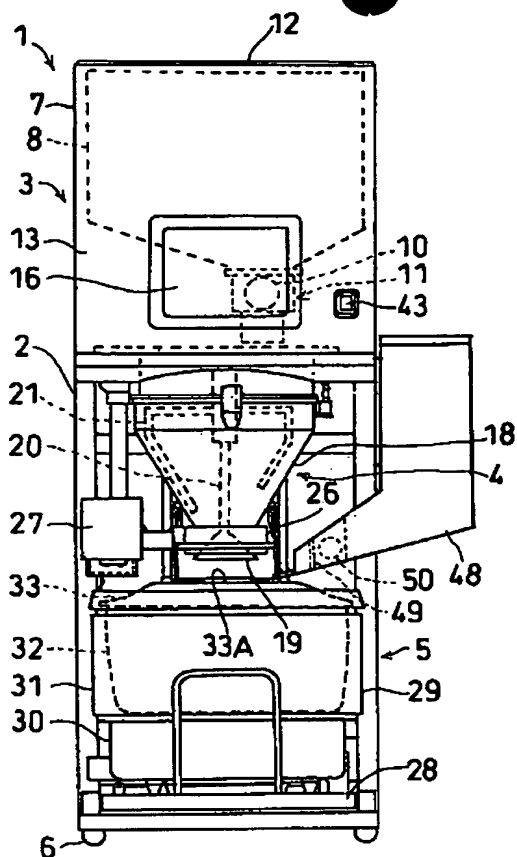
[Drawing 3]



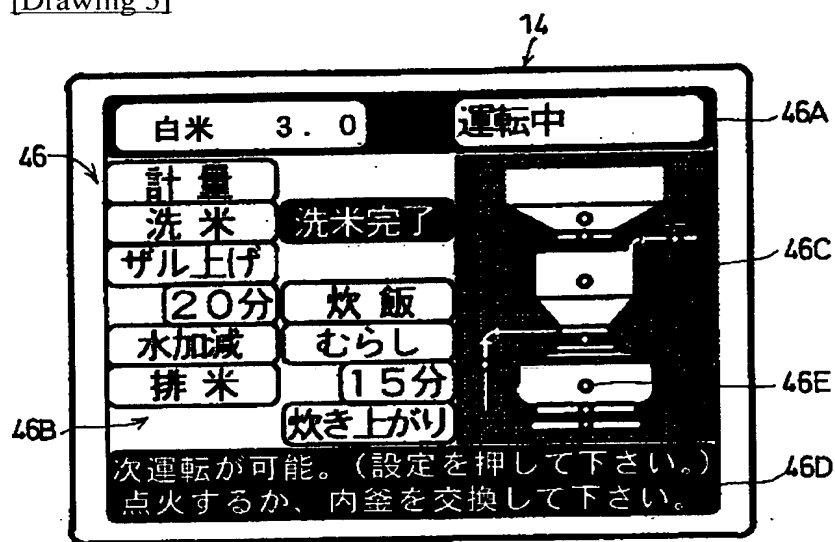
[Drawing 4]



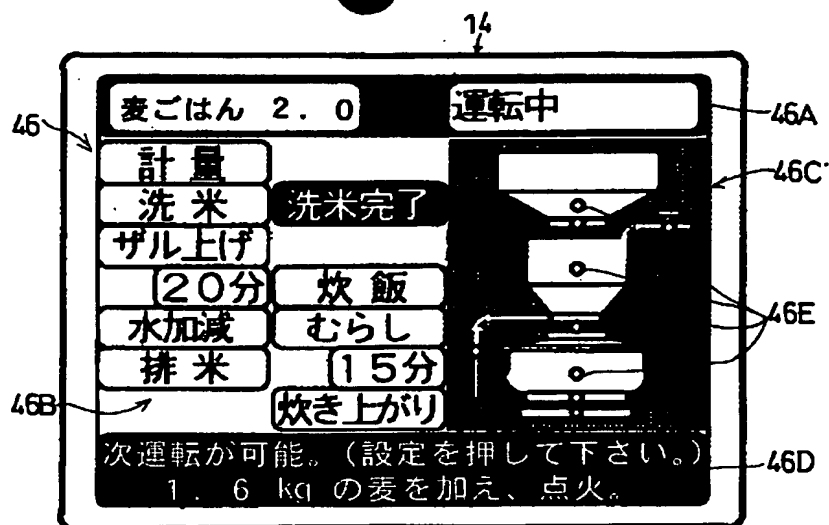
[Drawing 9]



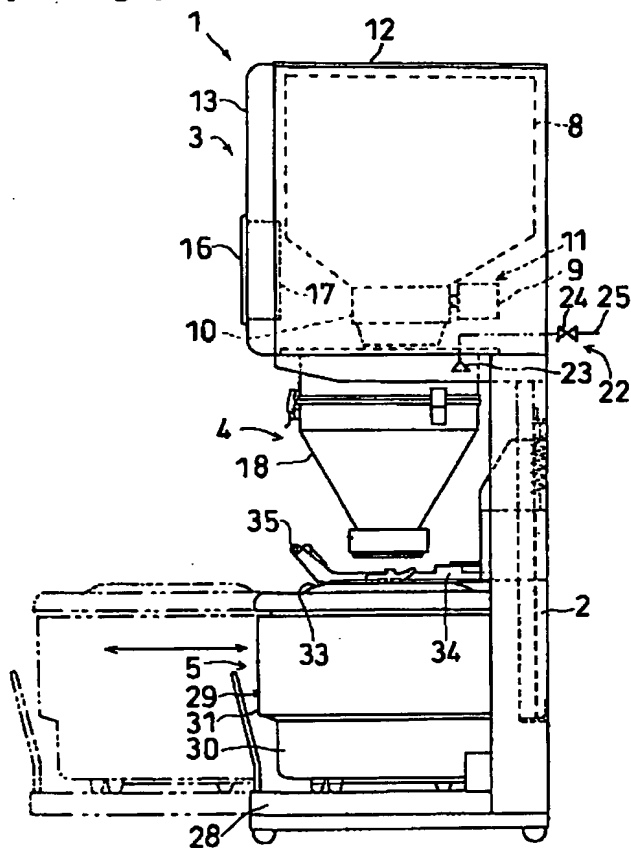
[Drawing 5]



[Drawing 6]



[Drawing 8]



[Translation done.]

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